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CHROMOSOME NUMBERS REPORT

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ABSTRACT

A first record of *Muhlenbergia quadridentata* chromosome number is given, a diploid chromosome number for *M. virescens* is reported for the first time, and the tetraploid condition of *M. montana* is confirmed.

RESUMEN

Se registra por primera vez el número cromosómico de *Muhlenbergia quadridentata*, un número cromosómico diploide para *M. virescens* se reporta por primera vez, y la condición tetraploide de *M. montana* se confirma.

KEY WORDS: *Muhlenbergia*, Poaceae, cytology

INTRODUCTION

The mostly American genus *Muhlenbergia* Schreber is comprised by two rather distinct groups which had been cytologically studied by several authors. Pohl (1964) studied the broad-leaved, mesic, rhizomatous species from the deciduous forests of eastern North America. While Peterson (1988), did chromosome counts for the group of annuals comprising the xeromorphic caespitose species, distributed in the western plains of America. They both reached the conclusion that the basic number for the genus is $x = 10$.

Chromosome counts were completed during a systematic study of the *Muhlenbergia montana* (Nutt.) Hitch. complex (Herrera-A. & Bain 1991; Herrera-Arrieta & Grant 1993, 1994), a group of thirteen perennial, xeromorphic caespitose species. Chromosome counts for three species of the complex were successful and are here reported. Chromosome number for *M. quadridentata* (H.B.K.) Kunth is a first report, the *M. virescens* (H.B.K.) Kunth chromosome count seems to be the first

diploid record of the aneuploid number reported by Reeder (1967), and the *M. montana* tetraploid condition reported by Reeder (1968) is confirmed.

MATERIAL AND METHODS

Chromosome determinations are based on observations of up to twelve cells from a minimum of five individuals per population, using a phase contrast microscope. Floral buds were field collected in 95 percent ethanol-glacial acetic acid (3:1) prior to fixation and storage under refrigeration in 70% ethanol. To stain: Hydrolyze in 1N HCl at 60°C for 7 to 10 minutes, and stain in Feulgen reagent for 2 hours, rinsed in running tap water for 3 minutes. Slides were prepared in a drop of 45% acetic acid, and squashing the floral buds under a cover slip. The cover slip was temporarily sealed with a paraffin-gum arabic mixture. Attempts to grow the plants from this species complex under greenhouse conditions failed, and therefore no mitotic counts were possible.

RESULTS

POACEAE:

Muhlenbergia quadridentata (H.B.K.) Kunth, $n = 10$. MEXICO. México: 2 km W of Río Frio, North exposition of Volcán Iztaccihuatl, 3100 m, *Pinus-Quercus* forest, *Herrera & Cortés 919* (CIIDIR,MTMG).

Muhlenbergia virescens (H.B.K.) Kunth, $n = 10$. MEXICO. Chihuahua: 25.6 miles S of Creel on road to Batopilas, 2100 m, table rock with *Arctostaphylos*, *Pinus* and *Quercus* spp., *Herrera* with *Peterson & Annable 969* (*CIIDIR,MTMG*).

Muhlenbergia montana (Nutt.) Hitchc., $n = 20$. MEXICO. México: Entrance to the National Park "Lagunas de Zempoala", 2960 m, forest of *Pinus hartwegii* and *Abies religiosa*, *Herrera & Cortés 926* (CIIDIR,MTMG).

All of them showing stable microsporocytes with normal bivalents during meiosis.

Recorded chromosome numbers from Reeder (1967, 1968) are: *Muhlenbergia virescens* $2n = 24$ and *M. montana* $2n = 40$.

DISCUSSION

The basic chromosome number recognized for *Muhlenbergia* is settled as $x = 10$ (Pohl 1964; Reeder 1967, 1968; Peterson 1988). Diploidy ($n = 10$) and tetraploidy ($n = 20$) are the most common in this genus, however one case of octaploidy was reported by Pohl (1964) for *M. californica* Abrams, a rare endemic species.

Chromosome counts remain necessary to support the interpretation of evolution in this genus. One of the important findings here is that the more widely distributed species of the complex (*Muhlenbergia montana*) is a tetraploid, while the other two

species from more restricted geographic areas (*M. quadridentata* and *M. virescens*), are diploids. All this seems to support the theory of evolution of grasses (Stebbins 1956).

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